



Images courtesy of Mainframe Entertainment.

Mainframe Entertainment

By Karen Raz

Mainframe Entertainment brings Tony Hawk 3D skateboard feature to life with Autodesk MotionBuilder software.

Tasked with bringing the world's most legendary action sports figure to life in 3D, production company Mainframe set out to develop an animated movie pipeline that would deliver uncompromised, totally authentic skateboarding performances. This mission led Producer Ben Burden Smith and Production Designer/CG Supervisor Casey Kwan to develop a motion-capture and Autodesk® MotionBuilder™-based pipeline for the animated computer graphics (CG) feature Tony Hawk in Boom Boom Sabotage.

Autodesk MotionBuilder software was tapped during every phase of the filmmaking process, from pre-visualization and scene blocking to performance review and approval to editorial feedback and virtual cinematography.

The 70-minute comedy-action-adventure places Tony Hawk and his Boom Boom Huckjam skateboarding show at the center of the story as the famous skater is unexpectedly kidnapped. The kidnapper is the town's villainous circus leader, Grimley, who attempts in vain to steal Hawk's spotlight. It is up to the local skaters to rescue Tony and his show. The film was produced by Mainframe and Tony Hawk, and will be distributed on DVD in the United States by FUNimation Entertainment in the fall of 2006.

Motion capture footage of Tony Hawk skateboarding on the Boom Boom Huckjam ramp was shot using a Vicon system at Hawk's Tony Hawk Industries (THI) offices in Southern California. All of the street skating was captured at Mainframe's studio in Vancouver with performances by professional skateboarders including Chris Haslam, Alex Chalmers, Keegan Sauder, and a host of others. Mainframe built a modular skate park in their studio, complete with movable ramps and obstacles that could be pieced together and reconfigured to match the action demands of any given sequence.

Autodesk®



Images courtesy of Mainframe Entertainment.

Smooth Moves

One of Producer Ben Burden Smith's greatest concerns on set was how the performers' moves would translate onto their CG counterparts. The 3D villains didn't follow conventional human proportions, and establishing a stylized motion direction from the outset was imperative. With MotionBuilder, the team could map captured motion data onto characters immediately to see whether or not moves were working. Scenes could then be reviewed with performers, tweaked on the fly, and the performers could see themselves acting in the context of the shot, immediately placing them in the same 3D POV as the character they were portraying. "With MotionBuilder instant feedback, our performers were nailing their characters within thirty minutes. MotionBuilder was an invaluable performance tool from our earliest moments on set, it really helped drive the execution and success of the film's physical comedy," explained Burden Smith.

Since a lot of the action in this film takes place with performers on skateboards, the motion blending capabilities of MotionBuilder were key to delivering seamless sequences. In skateboarding, once a trick is complete, a skater might immediately launch into another move, stand around, or take their board off a jump—MotionBuilder allowed Mainframe to link up independent moves and have them appear to flow naturally.

Virtual Cinematography

Autodesk MotionBuilder software afforded the Mainframe production team an incredible level of creative freedom. The application's ease of use even allowed non-technical production staff, such as Mike McKinlay, professional skater and the Skateboard Motion Capture Director, to become very involved in the filmmaking. McKinlay, having no training in any 3D software package, learned MotionBuilder in a matter of days and ended up producing 95% of the film's skateboard cinematography. "This was so incredible to me as a producer—one of my greatest priorities on this film was to get the best, most accurate representation of true skateboarding for the discerning skateboarders and skate fans out there. It was so rad to have Mike—a pro skater—get into the virtual arena with full 360 angle camera freedom to produce what is some of the coolest skate footage ever. This authenticity is HUGE for our type of production!" said Burden Smith.

"MotionBuilder helped tremendously in terms of quantity of work and meeting our production schedule deadlines. We did a huge amount of motion capture, and without MotionBuilder it would have taken days—even weeks to review and evaluate the moves, but with MotionBuilder we had the directorial options to make changes right away—on the fly," Burden Smith continued.

Flexibility with 3D Pre-Visualization

The fact that MotionBuilder provided so many production efficiencies allowed the Mainframe team much more freeform with their shooting. "Generally with an animated feature, you're working from very tight storyboards, and you rarely stray from the predetermined shots. On this film we would try out multiple variations of camera moves giving us the option to play around with them in editorial. As a result, the visual language of this movie is much more akin to a live-action film in terms of look and feel," said Casey Kwan, Production Designer/CG Supervisor.

MotionBuilder also gave the producers more confidence as a team. They opted not to produce 2D storyboards to avoid the miscommunication that can occur when you try to translate a 2D board into 3D. Using MotionBuilder to create 3D animatics was a huge advantage in communicating and working with animators, "Everyone's speaking the same visual language; it was much easier to deliver feedback on shots. Making a film of this nature is so collaborative and being able to see sequences in 3D before committing to hi-res renders allowed us to communicate and review material together, knowing that we were on the same page visually," Kwan continued.

In the future, Mainframe hopes to integrate Autodesk MotionBuilder software more tightly into each production pipeline whether or not the project is based around motion capture. This project prompted Mainframe to start teaching more of its animators and directors MotionBuilder because of the incredible value the application provides on any project as a pre-visualization tool and as a framework directors can use for testing camera angles and experimenting with the cinematography during the pre-production stage.